

Math 0361

Practice Test 4

1. If $Q(x) = 3x^2 - 9$, find $Q(\frac{1}{4})$

$$3\left(\frac{1}{4}\right)^2 - 9$$

$$3\left(\frac{1}{16}\right) - 9 = \frac{3}{16} - \frac{9}{1}\left(\frac{16}{16}\right) = \frac{3}{16} - \frac{144}{16}$$

$$\frac{-141}{16}$$

2. $(6y+3) - (-7y^2 - 7y + 3)$

$$6y + 3 + 7y^2 + 7y - 3$$

$$7y^2 + (7y) - 3$$

$$6y + 3$$

$$7y^2 + 13y$$

3.

$$(5x^2 + 5x - 4) + (2x^2 + 9x + 17) + (7x^2 - 15)$$

$$-7x^2 + 15$$

$$5x^2 + 5x - 4$$

$$2x^2 + 9x + 17$$

$$-7x^2 + 15$$

$$14x + 28$$

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$$3\left(\frac{1}{16}\right) - 9 = \frac{3}{16} - \frac{9}{1}\left(\frac{16}{16}\right) = \frac{3}{16} - \frac{144}{16}$$

$$\frac{-141}{16}$$

2. $(6y+3) - (-7y^2-7y+3)$

$$6y+3+7y^2+7y-3$$

$$7y^2+(7y)-3$$

$$6y+3$$

$$7y^2+13y$$

3.

$$(5x^2+5x-4) + (2x^2+9x+17) - (7x^2-15)$$

$$-7x^2+15$$

$$5x^2+5x-4$$

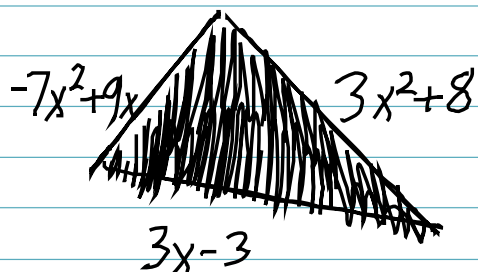
$$2x^2+9x+17$$

$$-7x^2+15$$

$$14x+28$$

4. Find the perimeter.

Add up all sides



$$\begin{array}{r} -7x^2 + 9x \\ 3x^2 + 3x - 3 \\ \hline 3x^2 + 12x - 3 \end{array}$$

$$\boxed{-4x^2 + 12x + 5}$$

5. $(4x^9)(-4x^9)(5x^5)$

$$4x \cdot 4x \cdot 5 = -80$$

$$\boxed{X^9 X^9 X^5} \text{ Add } = X^{23}$$

$$\boxed{-80x^{23}}$$

6. $(4x-6)(2x-6)$

$$\begin{array}{l} F (4x)(2x) = 8x^2 \\ O (4x)(-6) = -24x \\ I (-6)(2x) = -12x \\ L (-6)(-6) = 36 \end{array} \rightarrow -36x$$

$$\boxed{8x^2 - 36x + 36}$$

7. $(4x^2+1)^2$

$$(4x^2+1)(4x^2+1)$$

$$\begin{array}{l} F (4x^2)(4x^2) = 16x^4 \\ O (4x^2)(1) = 4x^2 \\ I (1)(4x^2) = 4x^2 \\ L (1)(1) = 1 \end{array} \rightarrow 8x^2$$

$$\boxed{16x^4 + 8x^2 + 1}$$

8. $(x+4)(x^2-3x+7)$

$$\begin{array}{r} x^3 - 3x^2 + 7x \\ -4x^2 + 12x - 28 \\ \hline \end{array}$$

$$\boxed{x^3 - 7x^2 + 19x - 28}$$

9.

$$(3y-9)(y+4)$$

$$3y^2 + 12y - 9y - 36$$

$$\boxed{3y^2 + 3y - 36}$$

10.

$$(3x+8)^2$$

$$(3x+8)(3x+8)$$

$$9x^2 + 24x + 24x + 64$$

$$\boxed{9x^2 + 48x + 64}$$

11.

$$(9x-4)(9x+4)$$

$$81x^2 + 36x - 36x - 16$$

$$\boxed{81x^2 - 16}$$

12.

$$(8x-4y)^2$$

$$(8x-4y)(8x-4y)$$

$$64x^2 - 32xy - 32xy + 16y^2$$

$$\boxed{64x^2 - 64xy + 16y^2}$$

Divide

13.

$$\frac{12p^5 + 18p^3}{3p}$$

$$\frac{\cancel{12}p^5}{\cancel{3}p^1} + \frac{18p^3}{3p^1}$$

$$\boxed{4p^4 + 6p^2}$$

14.

$$\frac{9x^4 - 6x^3 + 7x}{-9x^4}$$

$$\frac{\cancel{9}x^4}{\cancel{-9}x^4} + \frac{\cancel{6}x^3}{\cancel{-9}x^4} + \frac{7x}{\cancel{-9}x^4}$$

$$\boxed{-1 + \frac{2}{3x} - \frac{7}{9x^3}} \quad \checkmark$$

15.

$$\frac{x^2 + 4x + 3}{x + 1}$$

$$\begin{array}{r} \textcircled{x+3} \\ x+1 \overline{) x^2 + 4x + 3} \\ \underline{-x^2 - 1x} \downarrow \\ 3x + 3 \\ \underline{-3x - 3} \\ 0 \end{array}$$

0 Remainder

$$\boxed{x+3}$$

16.

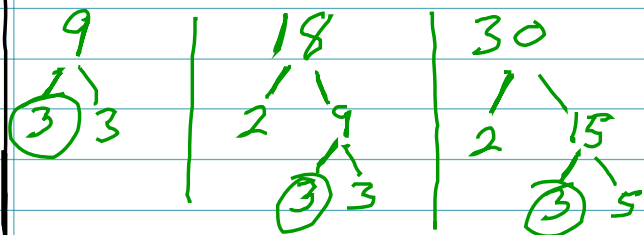
$$\frac{6x^2 + 17x + 7}{3x + 4}$$

$$\begin{array}{r} 2x + 3 \\ 3x+4 \overline{) 6x^2 + 17x + 7} \\ \underline{-6x^2 - 8x} \downarrow \\ 9x + 7 \\ \underline{-9x - 12} \\ -5 \end{array}$$

-5 Remainder

$$\boxed{2x+3 - \frac{5}{3x+4}}$$

17. Find GCF of 9, 18, 30



What number is in common?

3

18. Find GCF

$$x^{10}y^7, x^9y^6, \textcircled{x^7y^7}, \textcircled{x^4y^5}$$

Smallest powers

x^7y^5

✓

19. Factor out GCF

$$\overset{9m^4}{18m^7} + \overset{6m^2}{12m^5} - \overset{2}{4m^3}$$

$$\underline{2m^3} \quad \underline{2m^3} \quad \underline{2m^3}$$

$$2m^3(9m^4 + 6m^2 - 2)$$

✓

20. Factor by grouping

$$\overset{4}{(5xy + 20x)} + \overset{4}{(9y + 36)}$$

$$\underline{5x} \quad \underline{5x} \quad \underline{9} \quad \underline{9}$$

$$\textcircled{5x}(y+4) + \textcircled{9}(y+4)$$

parenthesis / Non parenthesis

$(y+4)(5x+9)$

✓